

What is claimed is:

1. An image retrieving apparatus for retrieving an image similar to a predetermined query image out of subject videos for retrieval, comprising:

5 a frame feature vector extracting means for extracting a feature vector of at least a part of frames included in said subject videos for retrieval, and for outputting said extracted one as a frame feature vector;

10 a frame feature vector storing means for storing the frame feature vector outputted by said frame feature vector extracting means;

15 an image feature vector extracting means for extracting a feature vector of said query image and for outputting said extracted one as an image feature vector;

20 a similarity calculating means for comparing the frame feature vector stored in said frame feature vector storing means with the image feature vector outputted by said image feature vector extracting means to thereby calculate a similarity of both vectors;

25 a frame feature vector integrating means for integrating frame feature vectors out of those stored in said frame feature vector storing means that satisfy a predetermined condition on similarity into at least one group; and,

a similar image selecting means for selecting at least one frame feature vector of a highest similarity out of the group integrated by said frame feature vector integrating means,

5           whereby images having the frame feature vector that is selected by said similar image selecting means is presented as a result of retrieval.

2.   The image retrieving apparatus as set forth in  
10 claim 1, wherein said frame feature vector integrating means comprises:

          a frame feature vector selecting means for selecting a frame feature vector of a similarity that is calculated by said similarity calculating means and is  
15 higher than a predetermined threshold value, out of frame feature vectors stored in said frame feature vector storing means; and

          a similar segment generating means for integrating frame feature vectors that are continuous in  
20 time, out of the frame feature vectors selected by said frame feature vector selecting means, into one group and for outputting the integrated group.

3.   An image retrieving apparatus for retrieving a  
25 video segment similar to a predetermined query video, out of subject videos for retrieval comprising:

a frame feature vector extracting means for extracting a feature vector of some or all frames, out of the subject videos for retrieval and for outputting the extracted one as a frame feature vector;

5 a frame feature vector storing means for storing the frame feature vector outputted by said frame feature vector extracting means;

a video feature vector extracting means for extracting a feature vector of some or all frames  
10 included in said query video, and for outputting the extracted one as a first video feature vector;

a video feature vector cutout means for cutting out a frame feature vector corresponding to a time length that the query video inputted by said video  
15 feature vector extracting means has, out of the frame feature vectors stored in said frame feature vector storing means, and for outputting the cutout one as a second video feature vector:

a similarity calculating means for comparing  
20 said first video feature vector outputted by said video feature vector extracting means with said second video feature vector outputted by said video feature vector cutout means, to thereby calculate a similarity of both vectors;

25 a video feature vector integrating means for integrating the second video feature vectors, out of

those outputted by said video feature vector cutout means, that satisfy a predetermined condition on similarity into at least one group; and

a similar video segment selecting means for  
5 selecting at least one of the second video feature vector that has a highest similarity in the group integrated by said video feature vector integrating means,

whereby a video segment having the second  
10 video feature vector selected by said similar video segment selecting means is presented as a result of retrieval.

4. The image retrieving apparatus as set forth in  
15 claim 3, wherein said video feature vector integrating means comprising:

a video feature vector selecting means for  
selecting a second video feature vector of which a  
similarity calculated by said similarity calculating  
20 means is higher than a predetermined threshold value,  
out of second video feature vectors outputted by said  
video feature vector cutout means; and

a similar segment generating means for  
integrating the second video feature vectors that are  
25 either continuous in time or partially duplicate, out of  
those selected by said video feature vector selecting

means into one group, and for outputting the integrated group.

5        5.    The image retrieving apparatus as set forth in  
claim 1, wherein said frame feature vector extracting  
means generates a resized image for at least a part of  
frames included in said subject videos for retrieval,  
and extracts a frame feature vector by applying a  
frequency conversion and a quantizing processing to said  
10   resized image.

6.    The image retrieving apparatus as set forth in  
claim 2, wherein said frame feature vector extracting  
means generates a resized image for at least a part of  
15   frames included in said subject videos for retrieval,  
and extracts a frame feature vector by applying a  
frequency conversion and a quantizing processing to said  
resized image.

20        7.    The image retrieving apparatus as set forth in  
claim 3, wherein said frame feature vector extracting  
means generates a resized image for at least a part of  
frames included in said subject videos for retrieval,  
and extracts a frame feature vector by applying a  
25   frequency conversion and a quantizing processing to said  
resized image.

8. The image retrieving apparatus as set forth in claim 4, wherein said frame feature vector extracting means generates a resized image for at least a part of frames included in said subject videos for retrieval, and extracts a frame feature vector by applying a frequency conversion and a quantizing processing to said resized image.

9. An image retrieving method of retrieving an image similar to a predetermined query image out of subject videos for retrieval, comprising the sequential steps of:

extracting a frame feature vector of at least a part of frames included in said subject videos for retrieval;

storing said extracted frame feature vector; extracting an image feature vector of said query image; comparing said frame feature vector with said image feature vector to thereby calculate a similarity of both vectors;

integrating frame feature vectors of which the similarities satisfy a predetermined condition on similarity into at least one group;

selecting at least one frame feature vector of the highest similarity in said integrated group; and

proposing an image having said selected frame feature vector as a result of retrieval.

5 10. The image retrieving method as set forth in claim 9, wherein the integration of said frame feature vectors into said group is implemented in such a manner that the frame feature vectors of which the similarities are higher than a predetermined threshold value are selected, and that out of said selected frame feature  
10 vectors, those that are continuous in time are integrated into one group.

11. An image retrieving method of retrieving a video segment similar to a predetermined query video out  
15 of subject videos for retrieval, comprising the sequential steps of:

extracting at least a part of frame feature vectors included in said subject videos for retrieval; storing extracted said frame feature vectors;

20 extracting a video feature vector of at least a part of frames included in said query video;

cutting out a video feature vector of a frame corresponding to a time length that said query video has, out of said frame feature vectors;

25 comparing said video feature vector extracted from said query video with the video feature vector cut

out from said frame feature vectors, to thereby  
calculate a similarity of both vectors;

integrating video feature vectors of which  
said similarities satisfy a predetermined condition, out  
5 of the video feature vectors cut out from said frame  
feature vectors into at least one group;

selecting at least one video feature vector of  
a highest similarity in said integrated group; and  
proposing a video segment having said selected video  
10 feature vector as a result of retrieval.

12. The image retrieving method as set forth in  
claim 11, wherein the integration of said video feature  
vectors into said group is implemented by the process  
15 that the video feature vectors of which said  
similarities are higher than a predetermined threshold  
value are selected, and those that are either continuous  
in time or partly duplicate in the selected video  
feature vectors are integrated into one group.

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13. The image retrieving method as set forth in 9,  
wherein said frame feature vector is extracted in such a  
manner that a resized image is produced for at least a  
part of frames included in said subject video for  
25 retrieval, and that a frequency conversion and a  
quantizing processing are applied to said resized image.



14. The image retrieving method as set forth in 10,  
wherein said frame feature vector is extracted in such a  
manner that a resized image is produced for at least a  
5 part of frames included in said subject video for  
retrieval, and that a frequency conversion and a  
quantizing processing are applied to said resized image.

15. The image retrieving method as set forth in 11,  
10 wherein said frame feature vector is extracted in such a  
manner that a resized image is produced for at least a  
part of frames included in said subject video for  
retrieval, and that a frequency conversion and a  
quantizing processing are applied to said resized image.

15 16. The image retrieving method as set forth in 12,  
wherein said frame feature vector is extracted in such a  
manner that a resized image is produced for at least a  
part of frames included in said subject video for  
20 retrieval, and that a frequency conversion and a  
quantizing processing are applied to said resized image.

25 17. A recording medium, wherein a program  
permitting a computer to implement the image retrieving  
method as set forth in claim 9 is written therein.

18. A recording medium, wherein a program  
permitting a computer to implement the image retrieving  
method as set forth in claim 10 is written therein.

5 19. A recording medium, wherein a program  
permitting a computer to implement the image retrieving  
method as set forth in claim 11 is written therein.

10 20. A recording medium, wherein a program  
permitting a computer to implement the image retrieving  
method as set forth in claim 12 is written therein.

15 21. A recording medium, wherein a program  
permitting a computer to implement the image retrieving  
method as set forth in claim 13 is written therein.